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## EVALUATING THE EFFICIENCY OF THE SCALE FOR PREDICTION OF POST-OPERATIONAL RELAPSE IN PATIENTS WITH NODULAR GOITERS

**Abstract.** *The article analyzes the results of the examination and surgical treatment of patients with relapsing and non-recurring course of nodular forms of goiter in order to assess the prediction possibilities of the prognostic scale for the relapse of nodular forms of goiter. It has been established that the use of this scale allows identifying the groups of patients with a potential risk of recurrence of nodular forms of goiter in the preoperative period and to prevent recurrence of the disease in the postoperative stage.*

**Key words:** *risk of relapse, nodular goiter, prognostic factors, prognostication scale.*

**Introduction.** Studies of recent years have shown an unceasing increase in the thyroid gland pathology in all countries of the world [1-4], and, due to this fact, the number of surgical interventions is increasing annually [5, 6].

Despite the progress of modern thyroid surgery, postoperative recurrence of goiter remains a rather common complication of thyroid gland surgery [7, 8]. According to various data, depending on the volume of the primary operation, the regional iodine deficiency and the duration of postoperative monitoring, from 0.3 to 80% [9, 10] of patients with the nodular forms of the disease are re-operated, due to a relapse of the disease.

It is difficult to establish a common chain of causative relationships in the development of postoperative recurrent nodular (multinodular) nontoxic goiter or to isolate the dominant factor among controversial literary facts based on the available data on the role of the directed effect of exogenous factors on the thyroid tissue and the human immune system [11, 12] Furthermore, the lack of a unified view of the etiology and factors of the development of relapse of nodular goiters

causes the lack of a unified prevention system [13-16].

**Objective.** To assess the prognostic possibilities of the prognostication scale that we developed to predict nodular goiter relapse.

**Material and methods.** We used the medical cards of patients with nodular goiters who were treated as inpatients in the surgical department of the Chernivtsi Regional Clinical Hospital during 2004-2016 as the material of a retrospective study. To achieve the homogeneity of the groups, the patients were selected according to the following criteria: women, histological confirmation of benign thyroid pathology. There were 40 persons who had been re-operated on a goiter relapse in the period from 2 to 10 years after the initial operation - the main (I, n = 40) group, and 60 patients with recurrence-free course of the disease for 14 years after the surgical intervention who were included in comparative (II, n = 60) group. In the analysis of these groups of patients, the data included in the prognostication scale of the risk of nodular forms of goiter relapse (No. 99332 UA) were taken into account. The evaluation was carried out according

to the table based on the studied parameters (table 1) in patients included in the design of the study according to the arithmetic sum of the points. The maximum number on this scale is 9, the minimum is 0 points. The risk group consists of the patients with a score of  $\geq 5$  points.

The clinical material of the prospective study included 60 patients with different forms of

goiter, operated from 2013 to 2014. The main (first) group was formed by 30 patients with nodular goiter, in which, when choosing the volume of surgery, the prognostication scale for the risk of recurrence of nodular forms of goiter was used, the comparative (the second) group involved 30 patients, whose operations were planned without using the scale.

**Table**

**The prognostication scale for the relapse of nodular goiters**

No	Prognostication factor	Points
1.	Living under the conditions of iodine deficiency	Yes – 1; No – 0
2.	Sex	Female – 1; Male – 0
3.	Age	< 50 years old– 1; > 50 years old– 0
4.	Hereditary history of goiter	aggravated– 1 non-aggravated – 0
5.	Thyroid status (Clinically and in laboratory)	hypo, hyperthyroidism – 1 euthyroidism – 0
6.	Lesions in thyroid gland lobes (According to ultrasound findings)	bilateral– 1; unilateral – 0
7.	Spread of lesion in the thyroid gland lobe (According to ultrasound findings)	$\geq 50\%$ of the lobe – 1 < 50% of the lobe – 0
8.	Echogenicity of perinodular tissue (According to ultrasound findings)	hypo-; hyperechogenicity – 1 Isochogenicity – 0
9.	Echo structure	Heterogeneous – 1 Homogeneous – 0

All patients have undergone standard clinical (collection of complaints and anamnesis of the disease, physical examination), laboratory tests (general analysis of blood, urine, biochemical blood test, coagulogram, ionogram) and instrumental research methods (ultrasonography, FNAB).

Laboratory examinations were performed using the immunochemical method with electrochemiluminescent detection (ECLIA) using the Roche Diagnostics test system (Switzerland) and the ELISA assay for enzyme-linked immunosorbent assays.

Statistical data processing was carried out using the computer programs "Excel 7.0" and "Statgraphics Plus 5.1 Enterprise edition".

**Results and discussion.** Having analyzed the results of the examination of the medical records of inpatients in both groups with the prognostic scale, we found out that 90% of the patients in the main (I) group and 45% of the experimental (II) group belonged to the risk group for recurrence of nodular forms of goiter. It was also found that in

80% of patients in group I, surgical intervention was economical (subtotal resection of one lobe), whereas in 60% of patients in group II, haemi- or thyroidectomy was performed, depending on the localization of pathological structures.

To confirm the effectiveness of this scale application, we conducted a prospective study comparing the remote results of surgical treatment of patients with nodular forms of goiter. All patients in the first group, who, according to the prognostic scale, were in the risk group were performed expanded volumes of surgery: thyroidectomy, provided bilateral placement of nodes and hemithyroidectomy with subtotal resection of the contralateral lobe under condition of unilateral lesion. The patients who did not belong to the risk group, were performed less volumed surgical intervention, depending on the localization of nodular structures: unilateral hemithyroidectomy or subtotal resection of both lobes of the thyroid gland.

In the patients of the second group, surgical interventions were performed according to

generally accepted methods, depending on the type of changes in the thyroid tissue found during sonographic and scintigraphic examination.

Within two to three years after the performed surgical intervention, all patients were monitored for their thyroid status with its correction by substitution hormone therapy according to the generally accepted scheme, if necessary, and ultrasound examination of the thyroid gland. There was a relapse of the disease in two patients of the first group and 12 patients in the second group, during the observation.

**Conclusions.** The proposed scale is an effective method to predict the risk of recurrence of nodular forms of goiter whose advantages are the following: objectivity and ease of use, it does not require complicated research. It makes it possible to identify groups of patients with a potential risk of recurrence of nodular forms of goiter in the preoperative period and to prevent recurrence of the disease in these patients.

**Prospects for further research.** It would be appropriate to continue studying the possibilities to improve this method in order to increase the prognostication accuracy for nodular forms of goiter relapse.

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## CONTENT:

Galagdina A.A., Dmytrenko R.R., Bambuliak A.V. Diagnostics of ischemic-reperfusion damage of the brain in rats afflicted with diabetes mellitus	3
Guranych S.P., Voronych-Semchenko N.M., Guranych T.V. Macro- and microelement status of rats with insulin resistance against the ground of iodine deficiency	6
Fedyshyn T.V., Maliar V.V., Maliar V.A. Peculiarities of utero-placental blood circulation formation in women with spontaneous and recurrent miscarriages associated with vagina dysbiosis	10
Rusnak V.F., Bedyk V.V. Growth of the pharynx at the end of the fetal stage of human ontogenesis	13
Teplytskyi S.S. Formation and development of the skin on the palmar surface of the hand throughout the period of prenatal ontogenesis and its importance in dermatoglyphics	16
Tkachuk N.P., Bilookyi V.V., Gyrla Ya.V., Sheremet M.I. Evaluating the efficiency of the scale for prediction of post-operational relapse in patients with nodular goiters	20
Yemelyanenko N.R. Anatomical transformations of the nasal septum in childhood	24
Kavun M.P. Morphogenesis of the hepatic-duodenum ligament in early ontogenesis of the human	26
Kotyuzhinskaya S.G., Umansky D.A. Functional state of lipittransport system in patients with atherosclerosis with fatty load	28
Lomakina Yu.V., Burdeina M.P. Stress-associated changes in the excretory function of the kidneys in old rats under the conditions of a usual light period	32
Malyar V.V. Structural and functional features of fetal membranes in pregnant women with moderate idiopathic oligo- and polyhydramnios	35
Nesterak R.V., Gasyuk M.B. Pilot investigation of the method of interactive training of patients at the stage of medical rehabilitation and treatment	38
Pecheryaga S.V., Marinchina I.M. Features of hemodynamic changes in spiral arteries with low placentation at the early gestational age	42
Psychenko V.V., Chernov V.S., Frenkel Yu.D. The status of extraorganic blood flow in pineal gland of rats under conditions of acute stress and twenty-four hour darkness	44
Reshetilova N.B., Glubochenko O.V., Kulish N.M., Dudko A.G. Formation of anterior cerebral vesicle cavities at the 5th week of the embryonic period	47
Riznichuk M.O., Galitskaya V.O., Dyhodyuk Yu.V., Kravchuk Yu.V., Vakaryuk O.V. Prader-will syndrome, diagnostics and currency features	50
Shalamay U.P., Pavlikivska B.M., Voronich-Semchenko N.M. The state of autonomous heart regulation in adolescents with light iodine deficiency and latent iron deficiency	52
Shutova N.A., Nikolayeva O.V., Sulkhodost I.O. Electromagnetic radiation impact on the cellular protective mechanisms in experiment	58
Yasnikovska S.M., Hrytsak H. Evaluation of clinic-laboratory and ultrasonic research results in different forms of the chorion's pathology in the first three-month of gestation	61
Yashchyshyn Z.M., Zaiats L.M., Yurkiv I.Y., Maslyak K.T., Vodoslavskaya N.Y., Sikomas M.T. Changes in neuroglial interrelation of muscle-intestinal nerve plexus of esophagus after one-sided crossing of vagosympathetic trunk	64
Navarchuk N.M., Kosteniuk S.V. Morphogenesis of the dentognathic apparatus during the early times of the human ontogenesis	67
Rusnak V.F., Bedyk V.V. Features of pharyngeal morphogenesis in five-week embryos	70
Talanova O.S., Apt O.A. Specifics of distribution of glycosaminoglycans in the white pulp of the spleen and stroma of rats after experimental modeling injection inside the fetus of antigens of different nature	72
Pivtorak K.V., Mazur I.A., Voloshin M.A. Correction of metabolic disorders caused by non-alcoholic fatty liver disease	74
Rozhko V.I. Research of content correlation of immunoglobulins and lisozyme in oral fluid of children with rampant caries against the background of gastro-intestinal diseases	78
Karavan Ya.R., Havaleshko V.P. Up-to-date anesthetic possibilities in dentistry practice in diagnosis of the patient's allergic status	80



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